DOCUMENT RESUME

ED 392 397 IR 017 683

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TITLE Alaska Instructional Technology Survey Summary. March 1995.
INSTITUTION Alaska State Dept. of Education, Juneau.
PUB DATE 95
NOTE 31p.; For 1993 summary, see ED 376 806.
PUB TYPE Statistical Data (110) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Computer Uses in Education; *Educational Facilities Planning; *Educational Technology; Elementary Secondary Education; Financial Support; *Instructional Development; Internet; Public Schools; *School Surveys; State Surveys; *Statewide Planning; Teacher Education
IDENTIFIERS *Alaska; Connectivity; Goals 2000; Technology Integration; Technology Plans

ABSTRACT

In March 1995, the Alaska Department of Education conducted an instructional technology survey of all schools and school districts. The purposes of the survey were to collect data on the numbers and types of instructional technologies currently being used in Alaska schools, to collect information on the utilization of those technologies, to determine the level of priority for instructional technology in Alaska's schools, to determine what needs must be met in schools to employ technologies effectively, and to collect data which could be compared to results of a similar survey conducted in 1993. Information from the survey will be used by the Department in developing the Goals 2000 State Educational Technology plan, in working with districts in the area of instructional technology, in responding to requests for information regarding levels of technology in Alaska's schools, and in responding to proposed legislation on instructional technology. Responses were received from 48 of the 54 district offices (88%) and from 290 of the state's 467 schools (62%). Comments from respondents, some of which are displayed in box quotes to illustrate tabular data, produced the following findings: (1) wide disparities continue to exist across the state in the kinds of technologies available in schools; (2) schools are attempting to upgrade their technology but are limited by lack of funding; (3) the use of technology with students is seen as a high priority among a majority of school superintendents and principals; (4) establishing school and district networks is a new priority for many school districts, but only 24% have networks in place; (5) achieving access to the Internet is also a priority; (6) teacher training remains one of the highest needs for schools in the area of technology. Recommendations include that school districts should continue to plan for the implementation of technology with particular attention to teacher training, that the state and districts should work together to fund technology needs in the interest of educational equity, and that the state should examine possibilities of modernizing the telecommunications infrastructure for easier connectivity to the information superhighway. (Contains 24 figures and 4 tables.) (BEW)

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Summary of
Alaska Instructional Technology Survey
March 1995

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Summary of
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March 1995

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Executive Summary

In March 1995, the Alaska Department of Education conducted an instructional technology survey of all schools and school districts. The purposes of the survey were to:

- Collect data on the numbers and types of technologies currently employed in Alaska schools for instruction.
- Collect information on utilization of the technologies.
- Determine the level of priority for instructional technology's in Alaska's schools.
- Determine what needs must be met in schools in order to effectively employ technologies in instruction.
- Collect data that could be compared to similar data collected from schools in 1993.

Information from the survey will be used by the Department in developing the Goals 2000 State Educational Technology plan and working with districts in the area of instructional technology. Information will also be used in responding to information requests regarding the level of technologies in Alaska schools and in responding to proposed legislation involving instructional technology.

Major Findings

- Wide disparities continue to exist across the state in the kinds of technologies available in schools.
- Schools are attempting to upgrade the technologies they use, but are limited by the lack of funding available to them for that purpose.
- The use of technology in schools with students is seen as a high priority by the majority of superintendents and school principals.
- Establishing school and district networks is a new priority of districts; however, only 24% of schools have networks in place.
- Achieving access to the Internet is also a new priority for school districts indicating a movement towards educational use of the "Information Highway"
- Teacher training remains one of the highest needs for schools in the area of technology.

Recommendations

School districts should continue to plan for the implementation of technology. Those plans should be comprehensive and include such elements as strategies for integration into the curriculum, teacher training, technology upgrades and replacement, budgets, timelines, and staffing patterns.

Teacher training in technology must be continued on all fronts: University courses, district inservice, pre-service courses, workshops and institutes. Technology's power for teachers can only be realized when teachers have acquired the skills to make the best instructional uses of these tools.

The state and districts must work together to fund the technological needs of schools. Educational equity will not exist until all students in the state have access to the opportunities that technology and telecommunications affords. The state should actively pursue all means by which districts and schools have access to the funding necessary to effectively implement technology in the classroom

The state should examine its role in modernizing the telecommunications infrastructure needed across the state for schools to connect to the Information Highway. Awareness and interest in access to the Internet has created a gap between the desire of schools to connect and the available telecommunications infrastructure. The state should work on behalf of schools to work with regulatory agencies, telecommunications providers and others to ensure that schools have access to high speed, affordable telecommunications connectivity.

Overview

In March 1995, the Alaska Department of Education conducted an instructional technology survey of all schools and school districts. Staff designed two survey instruments to collect data on the instructional uses of technology. The purposes of the survey were to:

- Collect data on the numbers and types of technologies currently employed in Alaska schools for instruction.
- Collect information on utilization of the technologies.
- Determine the level of priority for instructional technology's in Alaska's schools.
- Determine what needs must be met in schools in order to effectively employ technologies in instruction.
- Collect data that could be compared to similar data collected from schools in 1993.

Questionnaires were mailed to all districts and schools by the Department of Education in March 1995; no follow up questionnaires were sent. By June 1, responses were received from 48 of the 54 district offices and by 290 of the state's 467 schools. That represents a response rate of 88% for districts and 62% for schools. The 1995 survey elicited a higher response rate than the 1993 survey from which responses were received from 84% of districts and 53% of schools. Schools responding to the survey closely paralleled the demographic profile of all schools in the state. An analysis of respondents was made on the basis of building enrollments and grade levels in the school as well as the number o f responses from the five largest school districts to see if the data was representational of all schools in the state or if any type of school or district was overrepresented. While some differences may exist between respondents and non-respondents, the demographic analysis indicates that respondents can be viewed as generally representative of all schools in the state.

Table 1 shows the correlation of schools by size of enrollment represented in the survey and the statewide demographics of building enrollments.

Table 1
Responses by Building Enrollments

Building Enrollment	Schools Responding		All schools	
(Number of Students)	Count	Percent	Count	Percent
1-25	44	15%	74	16%
26-50	34	12%	56	12%
51-100	40	14%	68	14%
101-300	72	25%	117	25%
301 or more	100	34%	155	33%

Table 2 shows the percentages of the type of schools responding to the survey as compared to statewide demographics of schools by grade level.

Table 2
Responses by School Types

School type	Schools responding		All schools	
	Count	Percent	Count	Percent
Elementary	117	40%	177	38%
Middle/Jr. High	13	4%	29	6%
Middle/High School	17	6%	32	7%
High School	24	8%	47	10%
PE-12	119	41%	185	39%

Table 3 shows the number of respondents from the five largest school districts (Anchorage, Fairbanks, Kenai, Mat-Su and Juneau) as opposed to respondents in other districts compared to the total numbers of schools in the largest districts:

Table 3
District Size

	Schools Responding		All schools	
	Count	Percent	Count	Percent
Five Largest Districts	111	38%	185	39%
Other Districts	179	62%	285	61%

As can be seen by the three tables, respondents mirrored very closely the overall demographics of schools in the state. Although there may be some differences between respondents to the survey and non-respondents, the demographic picture of the respondents is representational of all schools in the state. Thus, result of the survey can be assumed to generally apply to all schools in the state. Schools responding to this survey represent a total of 4099 classrooms in the state and 78,690 students.

Information from the survey will be used by the Department in developing the Goals 2000 State Educational Technology plan and working with districts in the area of instructional technology. Information will also be used in responding to information requests regarding the level of technologies in Alaska schools and in responding to proposed legislation involving instructional technology. The information has been collected in such a way as to be easily updated in the future.

Major Findings

- Wide disparities continue to exist across the state in the kinds of technologies available in schools.
- Schools are attempting to upgrade the technologies they use, but are limited by the lack of funding available to them for that purpose.
- The use of technology in schools with students is seen as a high priority by the majority of superintendents and school principals.
- Establishing school and district networks is a new priority of districts; however, only 24% of schools have networks in place.
- Achieving access to the Internet is also a new priority for school districts indicating a movement towards educational use of the "Information Highway"
- Teacher training remains one of the highest needs for schools in the area of technology.

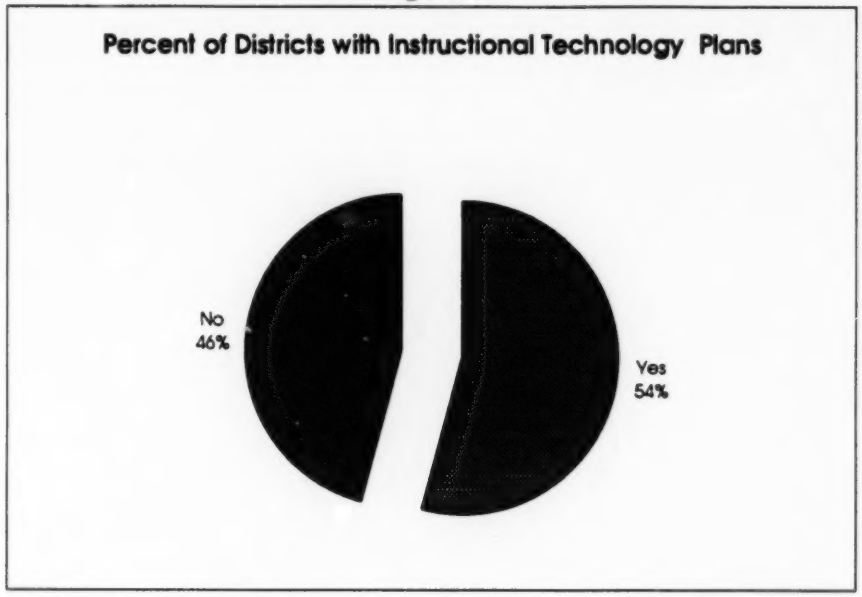
Superintendents Survey

Superintendents were asked a limited number of questions regarding technology in their districts. These questions were designed to elicit information regarding district level planning, priorities and communications networks.

"We see the need and hope next year to develop a technology plan"

Research has shown that planning for the inclusion of instructional technologies in schools is critical to its successful implementation and curriculum integration. Superintendents were asked if their district had a district wide instructional technology plan.. Over half the districts responding (54%) indicate that they have a plan as shown in Figure 1.

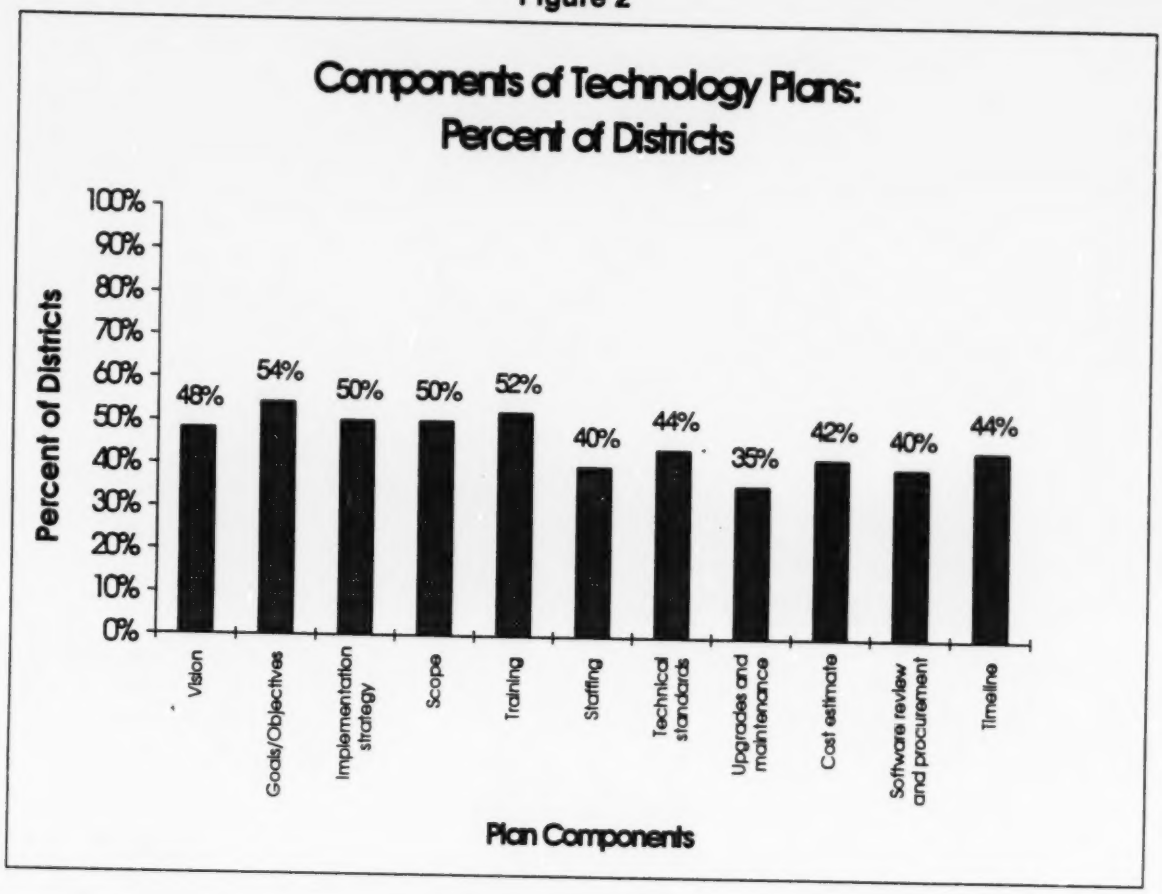
Figure 1



"Our first technology plan will be part of our Goals 2000 Plan. It will be for a four year period. When or if additional funds become available, we will be able to accelerate the plan."

Those districts indicating having a technology plan were asked a follow-up question designed to elicit information about the components included in the district plans. These components are typically found in successful technology plans. Figure 2 indicates the different components respondents report including in their plans. It may be significant that only 35% of the plans include strategies for obsolescence and hardware upgrades. In today's world of rapidly changing technologies, school districts would be wise to include upgrade cycles in their plans.

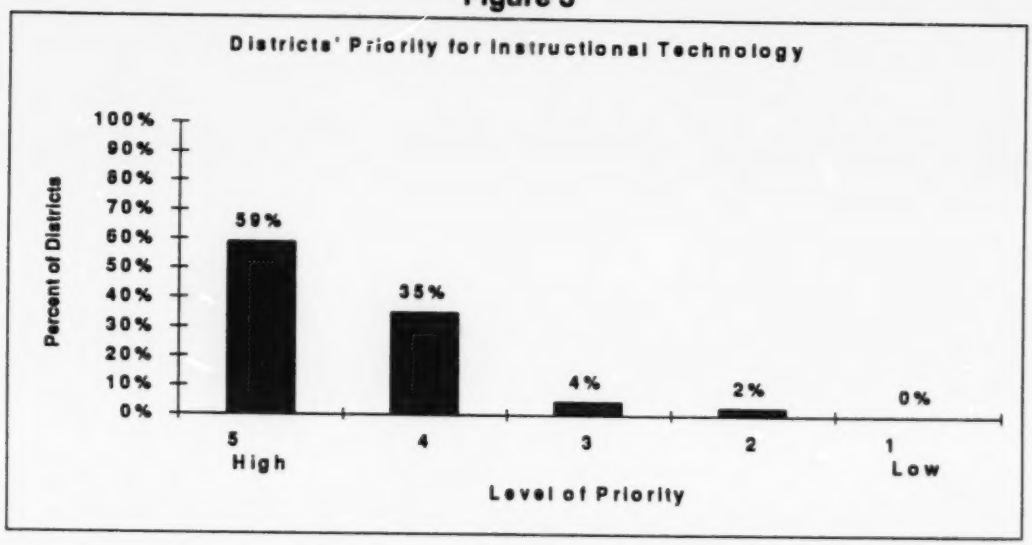
Figure 2



"Albeit our district's funding is minimal and in further jeopardy of reductions, we continue to move forward on all fronts regarding educational technology."

Of the superintendents responding, 94% see the use of instructional technology as a medium high to high priority. Only two districts felt that use of instructional technology is a medium low priority for their district as indicated in Figure 3. More superintendents in the 1995 survey report that instructional technology is of high importance; in 1993 47% saw the use of technology as a high priority.

Figure 3



Superintendents were asked if the schools in their district are connected by a local area or wide area network. Sixty-five percent of the Superintendents indicate that a computer network is in place as shown in Figure 4. In 1993, slightly over 40% of superintendents reported that their district had a communications network. However, in 1993, superintendents included fax machines, quickmail and UACN in their descriptions of networking while the 1995 survey was more specific in its definition of a network.

Figure 4

Percent of Districts with Computer Networks

"(We are) frustrated at the limited functions and budget cost of UACN and the state's lack of support for rural technology development. Videoconference or computer access development is available at the urban centers rather than rural."

Superintendents were also asked if schools in their districts connected to the Internet, and if so in what manner. Figure 5 shows that 60 % of the responding districts do connect to the Internet, but a follow up question indicated that the majority of school districts have dial-in access only.

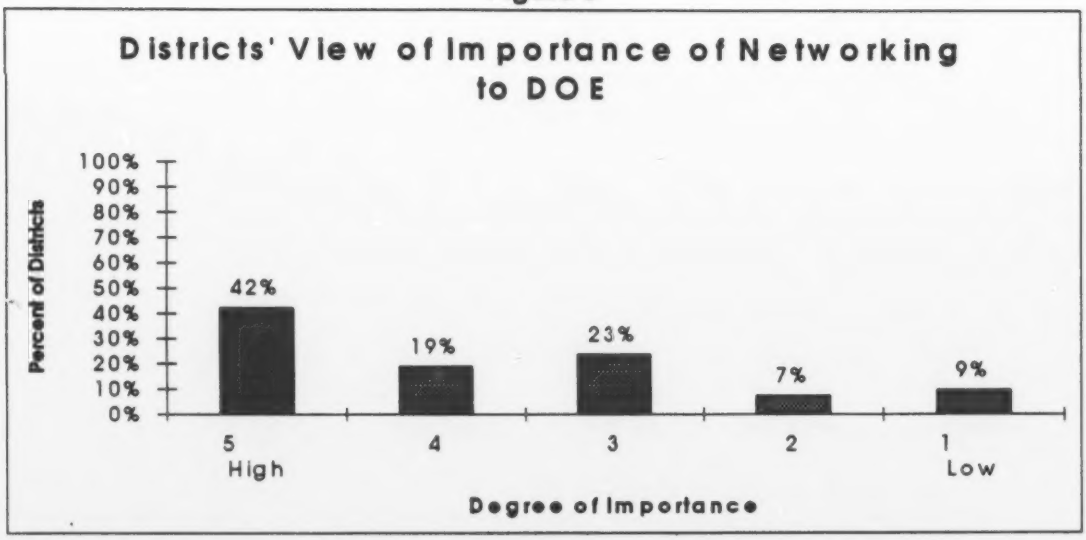
Figure 5

Percent of Districts with Internet Access

" I think this village needs a local connection. Even our classified staff have purchased their own Powerbooks and we have a Mac(Intosh) per student. . . a modem for each classroom and NO budget for phone calls."

Superintendents were asked how important it is to have the ability to connect electronically to the Alaska Department of Education. Figure 6 indicates the response to this question. The average importance of networking to the Department of Education was 3.77 indicating a fairly high need by districts.

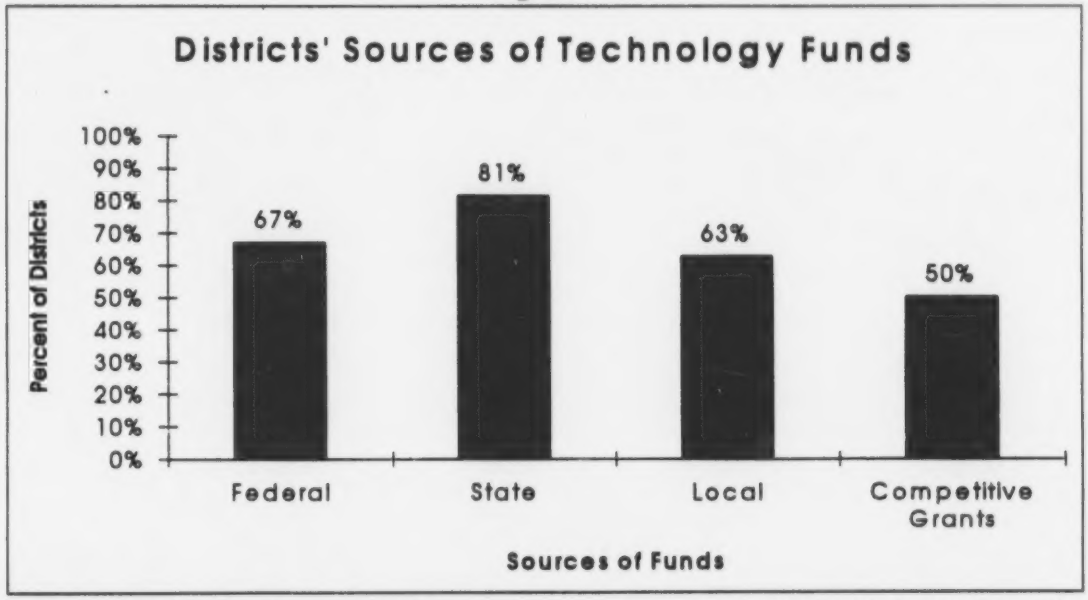
Figure 6



" Our technology came directly as the result of two back-to-back grants of $100,000 each. Were it not for these two grants, we would be sorely lacking."

Districts show that a mix of funds are currently being used to support technology in the schools. Four-fifths of the districts report using state funds, and half of the districts responding to the survey are using funds they have secured through competitive grants. Figure 7 shows percent of districts responding using federal, state, local funds and competitive grants to fund educational technology.

Figure 7



In general, superintendents are increasingly supportive or the use of technology in instruction, and are seeking multiple means of financing the cost of technology.

School Survey

The principal's survey was intended to elicit information regarding the kinds of technologies in each individual school, and the ways in which teachers in that school were utilizing the technologies available to them. In addition to detailing the kinds of technologies they utilize, principals were asked to determine the level of priority they placed on instructional technology and whether or not the school has a technology plan. Respondents were also given an opportunity to discuss the highest needs in instructional technology.

Computer Technologies:

Principals were asked a number of questions regarding the configuration and uses of computer based technologies in the schools. The following information summarizes the responses from those questions.

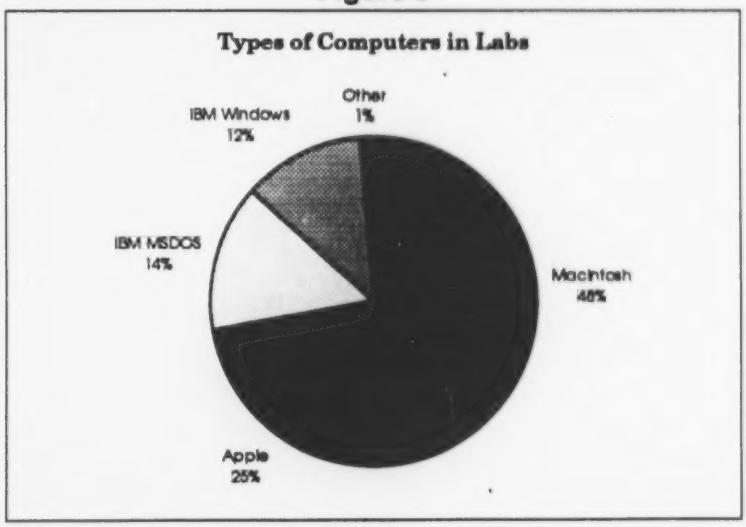
Labs:

"We are in dire need of a computer lab and/or at least computers in every class for easy student access."

Computers are often configured in computer labs in schools. A computer lab consists of space for a number of computers which are generally networked with printers, often with file servers, modems, and other devices (laser disks, cameras, etc.). Labs generally serve many classes of students and are scheduled for use by teachers. Principals were asked to give the number of labs in each school and to give information on the types of computers used in the labs.

A total of 397 labs were reported in 209 schools; 72% of the schools responding to the survey have at least one computer laboratory. The highest number of computer labs reported in a school was 10, the average number of computer labs per school is 1.5. Nearly half of the schools responding (46%) report that their school has one computer lab. Most labs use Apple brand computers with nearly half of the total computers being Macintosh computers. IBM labs accounted for nearly 26% of the total labs; nearly half of the IBM labs are running Windows operating system. Figure 8 shows the breakdown of labs by kind. In comparing this information to the data collected in 1993, the percent of labs with IBM computers is relatively constant. Schools seem to be replacing older Apple model computers with more powerful Macintosh computers; 1993 data shows 32.8% of the labs were Macintosh and 24.8% of the labs were Apple with 11% mixed Apple and Macintosh.

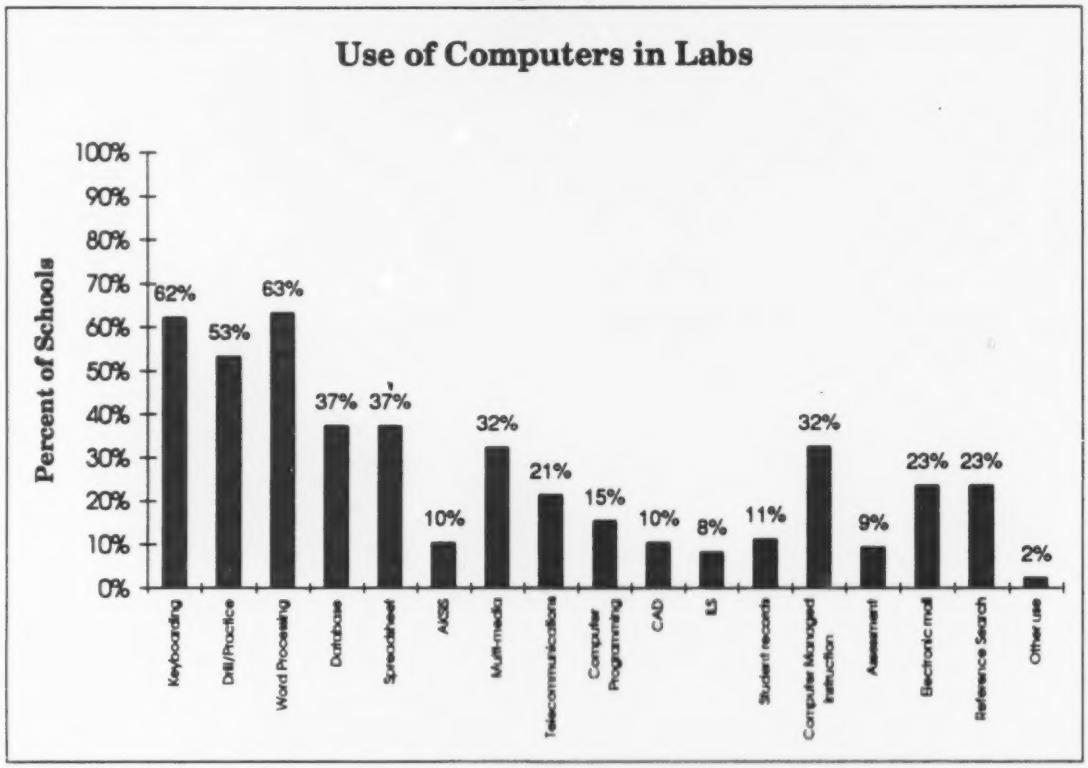
Figure 8



CD-ROM technology offers a wide range of powerful software for students and teachers; 121 schools or 58% of schools with computer labs reported having CD-ROMS drives in the computer lab. A total of 648 CD-ROM drives were reported in those labs; the most CD-ROM drives found in a computer lab was 80. Thirty-five schools report having only one CD-ROM drive in their computer labs.

Principals also were asked to indicate the uses for their labs as represented in Figure 9. Computer labs which generally accommodate many teachers representing multiple curriculum areas are utilized for multiple functions. The most prevalent uses for all types of labs are word processing, keyboarding, drill and practice, databases, and spreadsheets, these are generally regarded as tool-based applications.

Figure 9



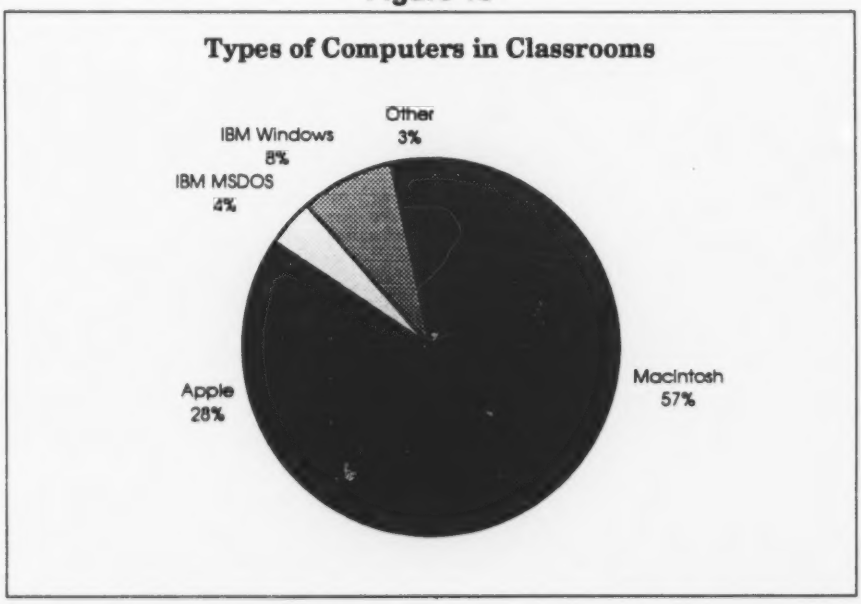
Classroom Computers

"Improving technology and integrating it into the classroom has been one of our school improvement goals"

The average number of computers found in the classroom is two; however, the number of computers in classrooms ranged from 0 to 53. Again there is a wide disparity in the numbers of computers located in classrooms where most students spend most of their time. Twenty schools report that the typical classroom has no computers. An additional 91 schools report that the typical classroom has only one computer.

Figure 10 shows the distribution of computers in the classroom by type. Most computers found in the classroom are Apple brand with IBM/IBM compatible computers lagging behind. Comparing this distribution to data collected in 1993, it is notable that Macintosh computer has increased by 21% its share of classroom computers. Apple computers have correspondingly decreased by 17%, again pointing to the trend of schools replacing older model computers with more powerful computers of the same brand.

Figure 10

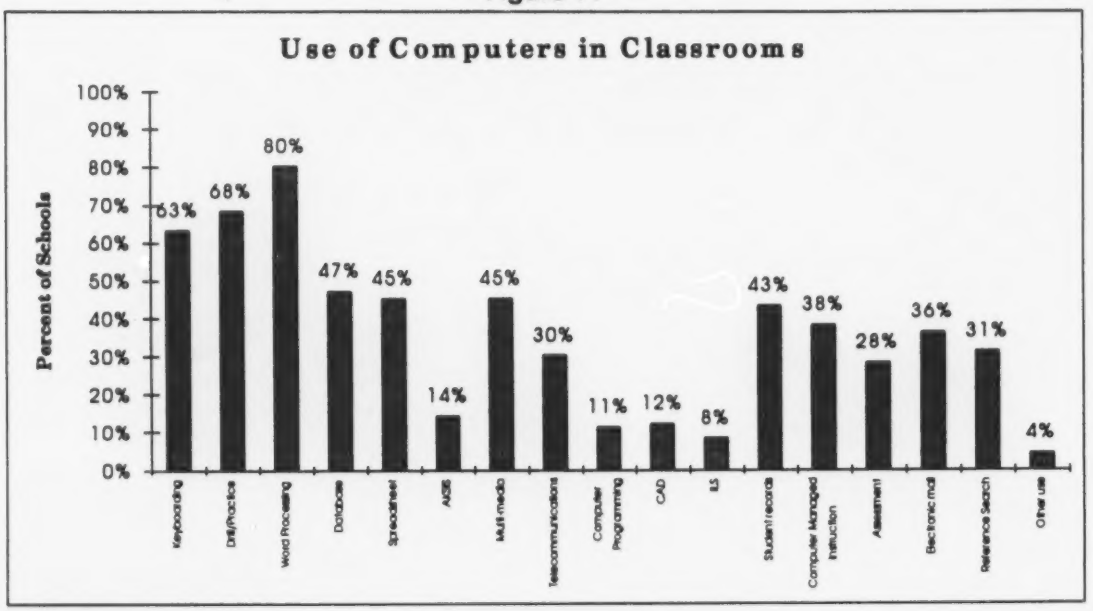


Fifty percent of the schools responding to the survey (145 schools) have at least one classroom with a CD-ROM player. Ten schools reported having no CD-ROM drives in the classroom. The school reporting the highest number of CD-ROM drives located in classrooms has 54 spread among 26 classrooms. Twenty-eight schools or 19% of those with CD-ROM drives in the classroom, report having enough CD-ROM drives to have one per classroom.

"We need technology--our teachers use the Title I lab, but it is not available a lot. We need classroom computers with portable laptops for individual use."

Very little difference is seen in the uses of computers in the classroom and uses in the lab as noted in Figure 11. The top use of computers in the classroom is word processing, followed by drill and practice and keyboarding, database, spreadsheet and multimedia use. Classroom computers are used far more than lab computers for student records, assessment tools, e-mail and reference searches.

Figure 11



Library/Media Center:

The third general configuration of computers in most schools are those in the library/media center. Figure 12 shows the distribution of computers in the library by type. Library configurations are notable in that IBM/IBM compatible computers are more prevalent than in other areas of the school. As in both labs and classroom, Macintosh computers have increased (8%) while Apple computers have decreased (6.5%) over the last two years. IBM computers running either DOS or Windows accounts for 46% of all computers in the library, as compared to 37% in 1993.

Figure 12

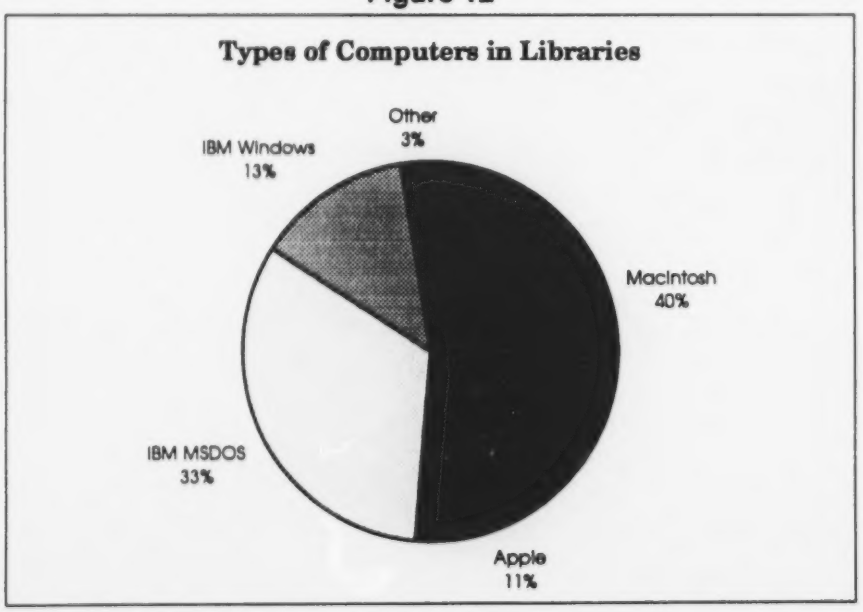
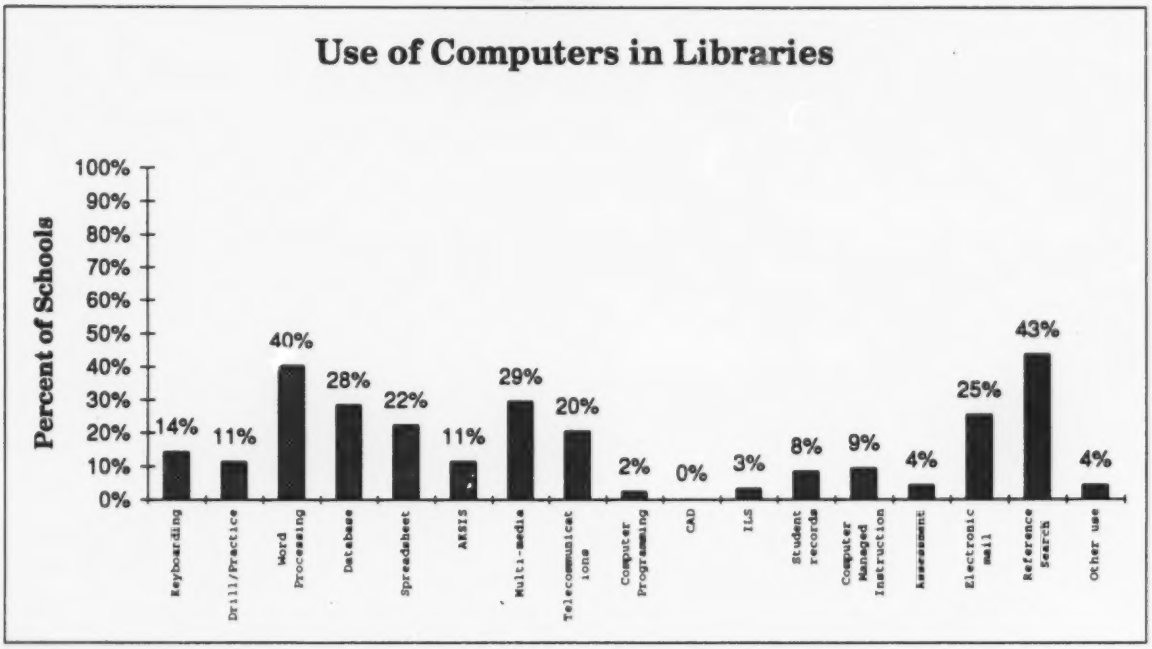


Figure 13 shows the reported used for each type of computer located in libraries. Computers located in libraries are used more for applications commonly connected to the library such as conducting reference searches. The two highest uses of computers located in libraries are, reference searches, word processing. Other predominate uses of computers in the library include multi-media, databases, electronic mail, spreadsheets and telecommunications.

Figure 13



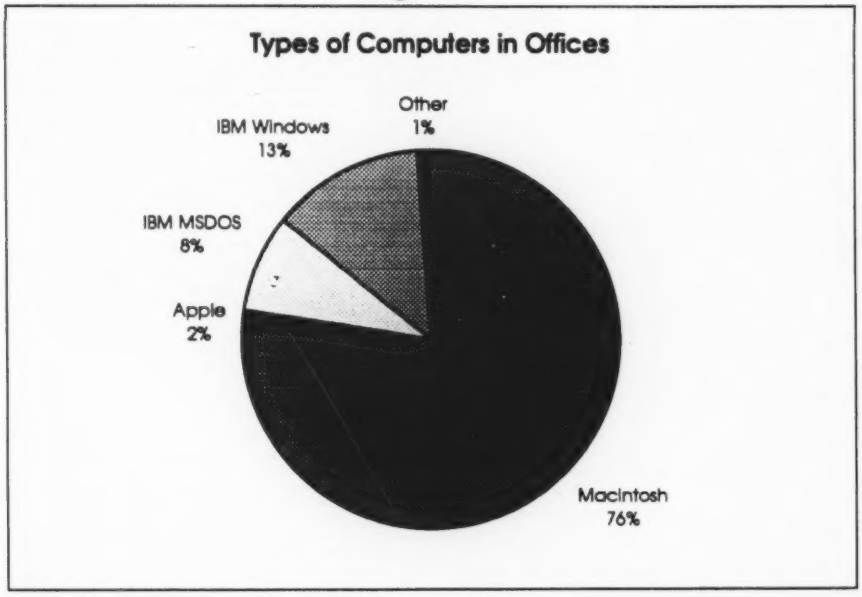
"At our school the library aide is responsible for software, computer maintenance and overseeing the computer lab. . . This person has an inordinate amount of responsibility and duties."

Over half (59%) the school libraries of schools responding to the survey are not automated. Of the automated school libraries, 83% report having automated (computerized) card catalogs and 87% report automated circulation systems. CD-ROM drives are often found in libraries where reference materials can be stored on CD-ROMS; 42% of the schools responding to the survey report having at least one CD-ROM drive located in the library. The highest number of CD-ROM drives reported located in the library was 14.

Office Computers

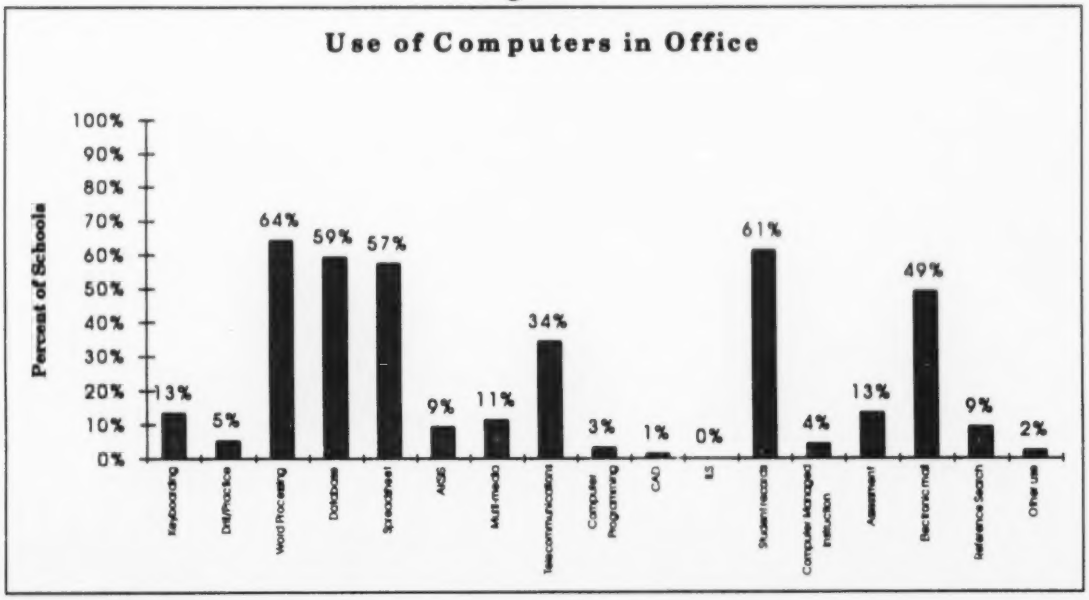
Schools were asked in the 1995 survey to identify types of computers and their uses in school offices. This data was not collected in 1993. Macintosh computers accounts for over three-fourths of the computers in school offices. IBM running both DOS and Windows accounts for nearly all the other computers in school offices as shown in Figure 14.

Figure 14



As would be expected, the uses of computers in school offices is somewhat different than the uses in classrooms, computer labs and libraries as shown in Figure 15. While the use of basic tool applications of word processing, databases and spreadsheets predominate in offices, one of the largest uses of computers in school offices is for student records. Electronic mail and telecommunications also are large functions of computer in school offices.

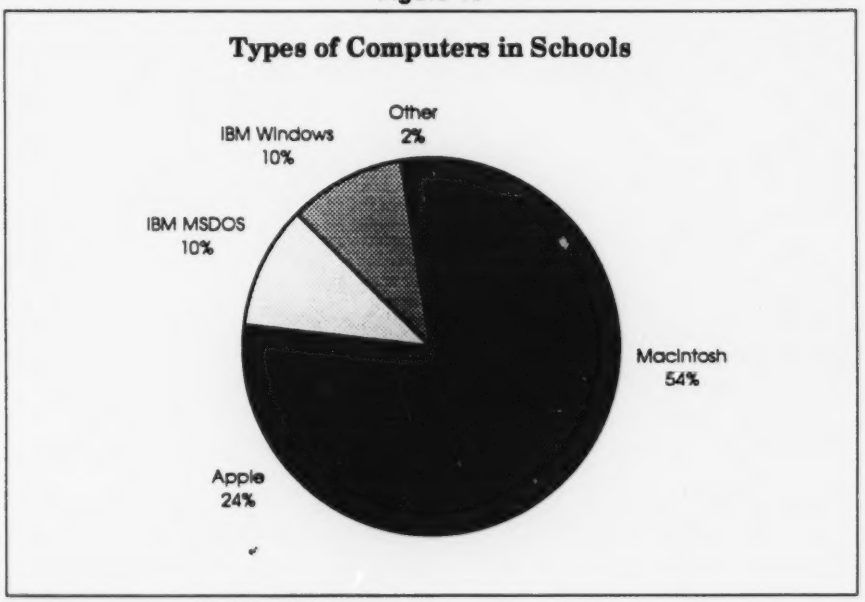
Figure 15



Total Computers

In 1993 many of the computers noted in all three general configurations were older Apple IIe and IIc computers especially in the classroom where Apples represented 45% of the total number of classroom computers. These computers were being used heavily for drill and practice. Two years later, it seems that many schools are upgrading those computers to Macintosh computers which generally are capable of higher level applications such as multi-media, desktop publishing, and other sophisticated uses. Figure 16 denotes the total percentages of all computers in schools by type of computers.

Figure 16



Totals from the 290 schools that responded to the survey:

Total number of labs	350
Highest number of labs in one school	10
Lowest number of labs in one school	0
Total Classrooms in Survey	4099
Grand Total Number of Macintoshes	7591
Grand Total Number of Apples	3351
Grand Total Number of IBM DOS	1488
Grand Total Number of IBM Windows	1461
Grand Total Number of CD-ROM Drives	2066
Grand Total Number of Other Computers	336
Average number of computers in typical classroom	2

"Our school uses our computers to the limit of their capability and capacity. We need, desperately to upgrade. . ."

Calculators:

The National Council of Teachers of Mathematics (NCTM) has recommended students have available to them and use calculators to perform certain kinds of math functions. Principals were asked to report on the number of different kinds of calculators in their schools. Most calculators in use by schools are basic four function calculators. Figure 17 shows the breakdown of the types of calculators reported in the school. During the two years since the last data was collected, there has been a slight rise (1.5%) in the percentage of scientific calculators reported, but the most significant rise has been in the percentage of graphing calculators which is up by over 6%.

Figure 17

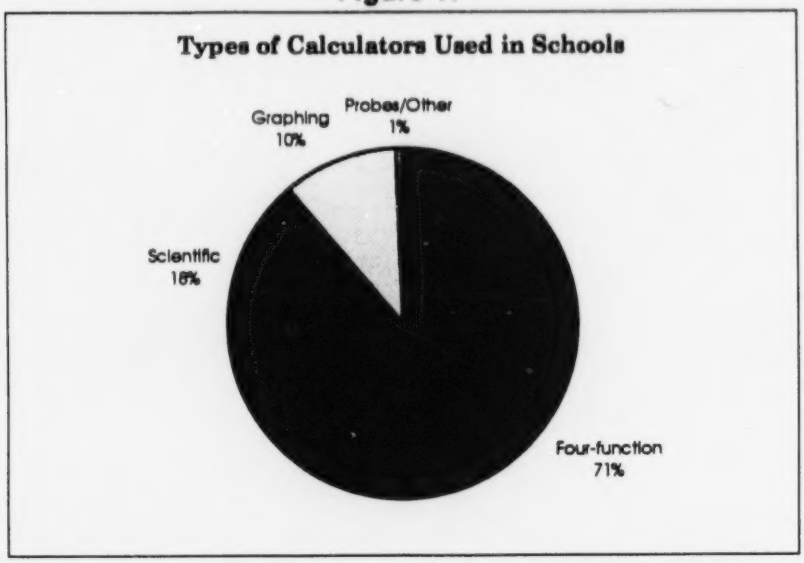


Figure 18 shows the prevalence of each type of calculator in different types of schools. This information shows as secondary schools increase the sophistication and difficulty of mathematical calculations, the total calculators include a mix from four-function to graphing. In elementary schools the most prevalent calculator is the simpler four-function calculator.

Figure 18

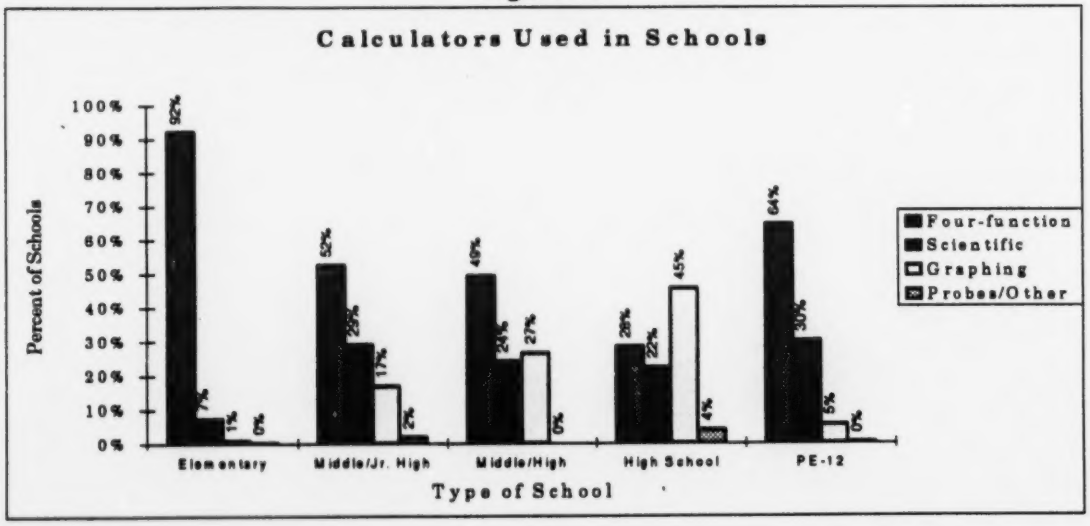
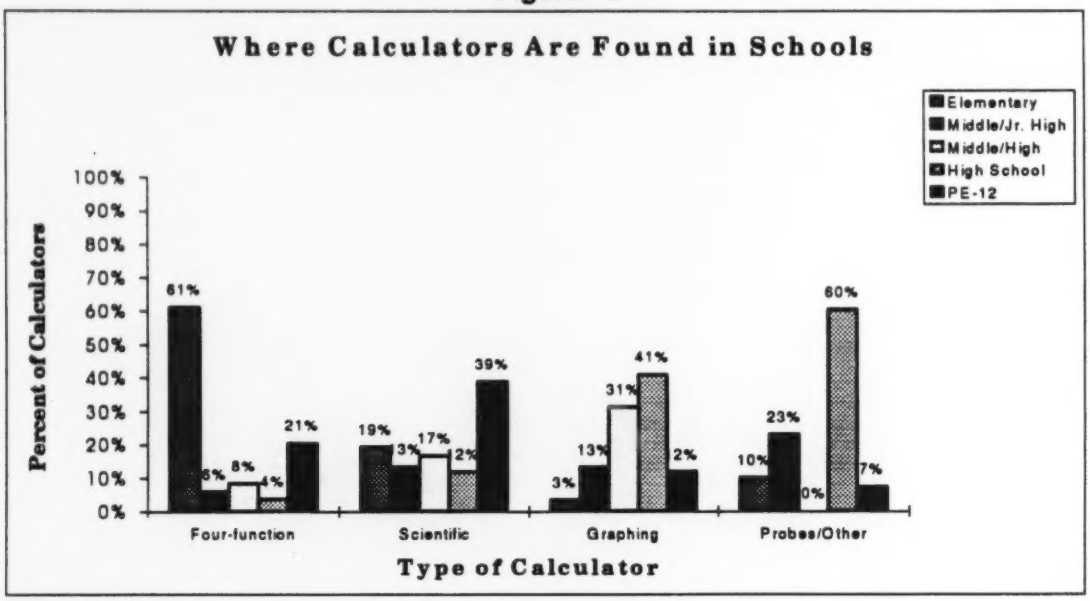


Figure 19 shows where the total number of calculators are located. The largest percent of scientific calculators are found in PE-12 schools, the rest are evenly distributed among all types of schools. However, middle/jr high schools represent only a little over 6% of survey respondents but have 17% of the scientific calculators and 31% of graphing calculators.

Figure 19



Graphing calculators which are generally used in more advanced classes are found predominantly in secondary schools with a total of 41% located in high schools. Again, since high schools account for less than 10% of survey respondents, this shows that the highest concentration of these tools is where one would expect them. No graphing calculators were reported in 234 schools or 81% of the schools responding to the survey. New technologies such as calculator based laboratory devises are almost totally found in high schools (60%).

Many schools (50%) report that they encourage students to purchase and use their own calculators at school. An estimated 18% of students in schools responding to this survey use their personal calculators in school.

Telecommunications and Connectivity

Schools in Alaska as elsewhere are increasingly becoming wired for networking and telecommunications. In this section of the survey, principals were asked to report on the networking capabilities and telecommunications use in their schools.

Networked Buildings:

In order to realize the efficiencies of technology that businesses already employ, schools need to be wired for networks that ideally are capable of carrying voice, video as well as data. Networking allows for easy exchange of information within the building via internal e-mail as well as sharing resources such as

software and CD-ROM's. In addition, networks will allow entire buildings to access telecommunications services without the expense of individual classroom data lines and modems.

"We passed a bond and will begin a renovation project this spring. Included in the plans area LAN, cable wiring and telephones in every classroom as well as a computer lab and automating the school library."

The 1995 survey data shows that 24% of the respondents have some type of building network. Of those with a network. 93% of those networks are carrying data while only 28% include voice (telephone) and 19% of those networks include video. This information indicates that most Alaska schools still need to be wired for networks

Internet and On-line Access

Schools were asked if they connect to the Internet, a vast connection of computer networks which allows users to access information. Nearly half (47%) of schools responding to the survey indicate that they connect to the Internet. Of those however, only 11% or 15 schools connect directly through high speed lines; 82% report that they dial-in to the Internet. Eleven percent also report having a library connection to the Internet. Internet access has made great strides over the past two years; in 1993 only 10% of the schools responding to the survey indicated that they use the Internet.

" We are a rural village in Alaska. I have seen Netscape in action. I feel it is a disservice to the students in villages not to have the same capabilities."

Schools were also asked to identify the kinds of on-line services they use to connect to the Internet. More schools responding to this question use the University of Alaska Computer Network (UACN) than any other identified network (54%). Other means of connecting to Internet services include the State Library Electronic Doorway (SLED) which was names by 45% of the respondents, and commercial services which was identified by 29% of those responding to this question.

" We were fortunate to have limited access to the UACN for part of the year. Our budget cannot meet the high cost of phone line hook-up to file servers in the state."

Telephones and Modems:

In order for most schools in Alaska to access on-line computer services and networks it is necessary for schools to have telephones and modems. Modems were reported available in 444 of the 4099 classrooms covered by this survey (11%). Forty-five schools (16%) reported having no modems which is a marked improvement from the 1993 survey which showed that 38% of the schools had no modems. The maximum number reported available for instructional use by schools was 4.

Answers to the question what percentage of your classrooms have phones generated a wide disparity of responses. Thirty-eight percent (38%) of the schools responded that none of their classrooms had phones which compares to nearly 50% in 1993. Twenty-two percent (22%) of the schools responded that all of their classrooms had phones, an increase of only 2% in the last two years. Thirty-six percent (36%) of all the classrooms covered by the survey have telephones Schools also reported on the number of fax machines in their buildings; 87% of the buildings report having fax machines. This represents a significant increase of the availability of Fax machines in schools over the past two years; in 1993 only 38% of the schools had FAX machines.

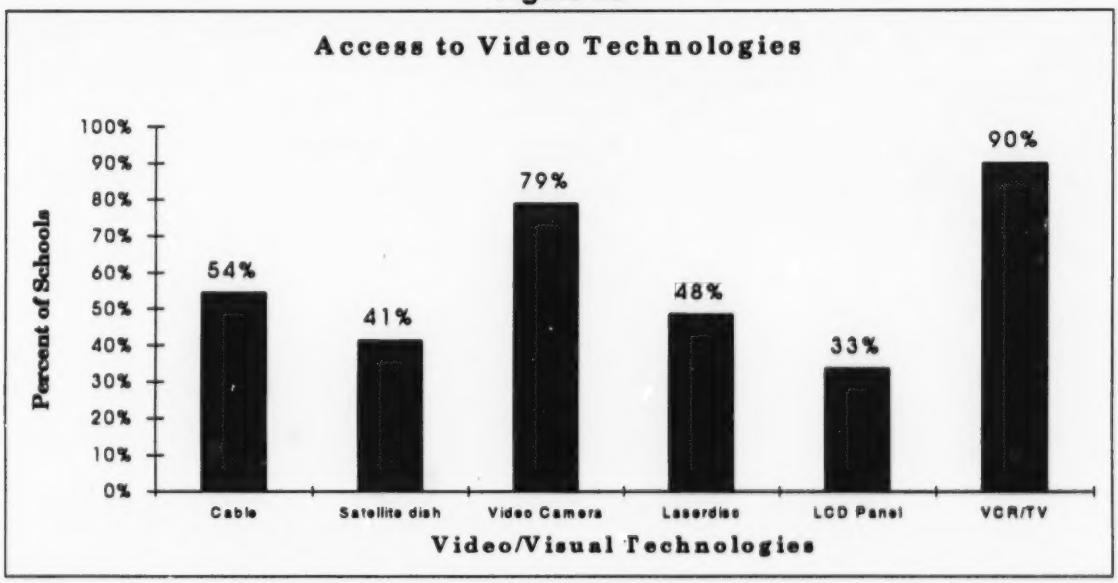
Video/visual based Technologies:

Digitization and compression of video technologies are quickly changing the video technology landscape. Use of digitized video over fiber optic networks will allow 500+ channels of entertainment and information in the home Plans are currently underway for services on these networks that will allow video on demand, more extensive home shopping, electronic medical house calls, electronic banking, access to databases and electronic libraries, and highly interactive games. These new networks have vast potential for use by schools, however most schools do not have the infrastructure to capitalize on the potential these networks hold for education.

"This is a 100% Native school. We are isolated. There is little opportunity to find out about the outside world. There is a very high dropout rate. Increased technology-multimedia could decrease the dropout rate by providing alternative methods of instruction for these children."

Figure 20 provides information on the prevalence of video based technologies in the responding schools. In the two years since the last survey, increases in the availability of these technology has increased by an average of 10%. VCR's/monitors have increased by 9%; satellite dishes by 7%, videocameras by 7%, laserdiscs have increased by 11% and LCD panels have increased by 10%.

Figure 20



Most schools responding to the survey reported having the "basic" technology of videocassette recorders and monitors; although 34 schools (11%) report having no video cassette recorders (VCR's) or television/monitors, the maximum reported was 45 VCRs/monitors in a school.

"Distance education (Star Schools) is imperative for the rural school education program."

As is the case with telephones in schools, there is wide disparity among schools with cable television. While 54% of the schools report they have a cable connection to the school, only 32% of the classrooms represented by the survey have access to cable. The lack of cable in many schools may be due in part

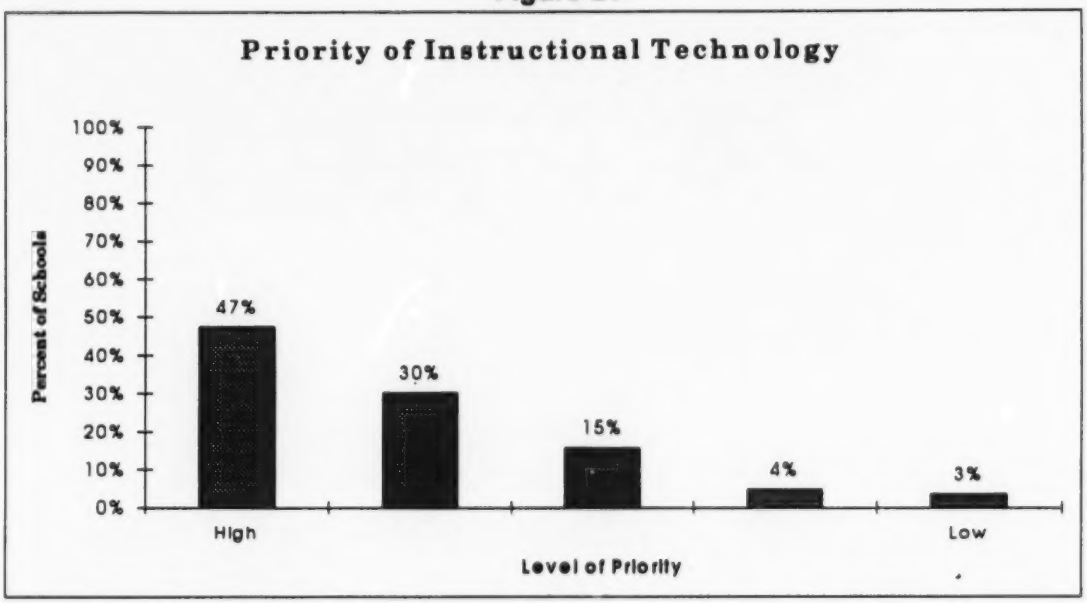
to the lack of availability of cable in some rural communities. Of the schools without cable connections, 44% report having satellite dishes which allow them to access video programming. Of all the schools with satellite dishes, 75% are participating in a satellite distance learning program.

Technology Priorities/Planning

"The staff is committed to upgrading our technology capabilities as a high priority."

Principals were asked how high a priority instructional technology is for their schools on a scale of 1 to 5 with 5 being a high priority. Figure 21 shows that nearly half the schools responding feel that instructional technology is a high priority. The percentage of school placing technology as a medium-high to high priority (77%) is lower than superintendents giving technology a medium high to high priority (94%).

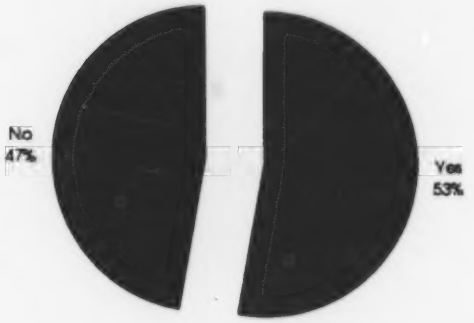
Figure 21



When asked whether the schools had a technology plan, 53% indicated they do have a plan as indicated in Figure 22

Figure 22

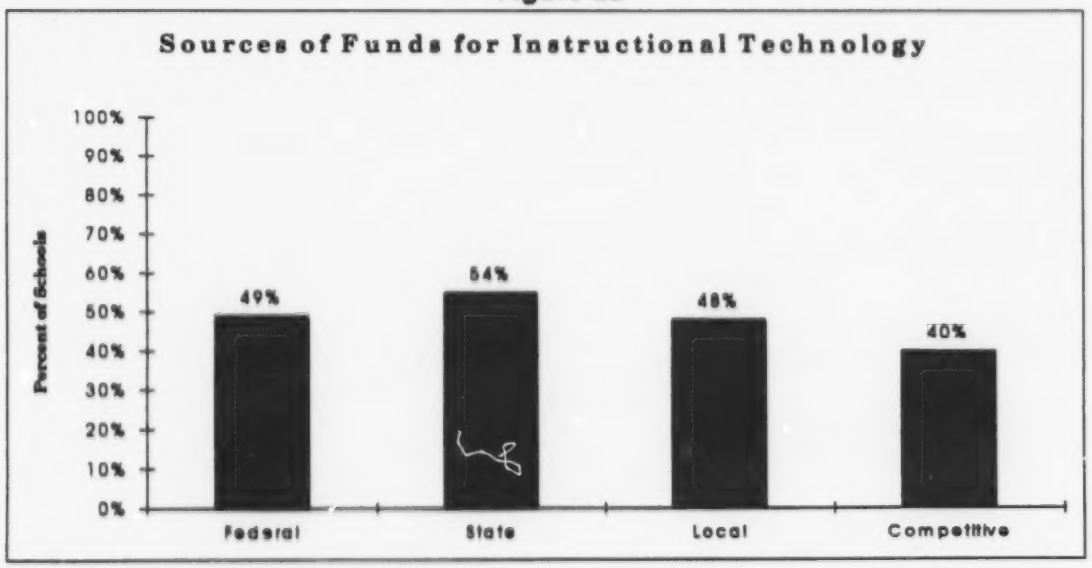
Percent of Schools with School-Based Technology Plans



"Because of the lack of a district technology plan and lack of funding (our) students are not getting the same level of technology education as other students in (the district). We desperately need to make this a state priority for ALL students in Alaska."

Principals were also asked to indicate the funding sources they use to pay for the technologies in their buildings. Figure 23 indicates that schools are using a wide variety of sources to fund educational technology. Additionally, 19% of the responding schools identified using other sources of funding for technology. The most often cited funding used in the "other" category was PTA funds followed by donations by businesses and individuals.

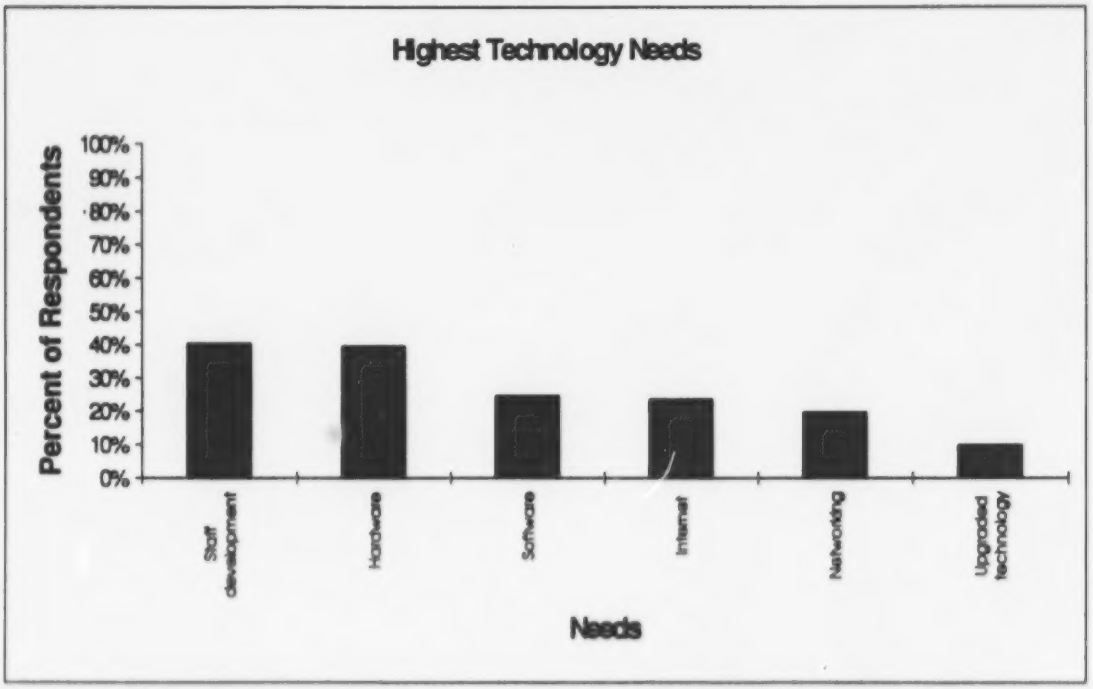
Figure 23



"Help! As you can see, our district and school is in the technological dark ages without the money to finance new equipment. We need to enter the 21st Century now. Please send money!"

Finally, principals were asked to indicate their three highest needs in the instructional technology. Summaries of the top needs indicate that teacher training/staff development continues to be the highest need for schools closely followed by additional hardware. Figure 24 shows the top areas of need as reported by the schools. While the top need of staff development was also the top need expressed in the 1993 survey, other needs rising to the top such as Internet access and networking are new and reflect changes in technology within the last two years.

Figure 24



"Students need to be exposed to more computers and technology at a younger age. The older students need more classes offered to make them more comfortable using modems, computers, on-line services and learning to use the technology in their daily lives. Staff needs training, both ongoing and intensive distance education to teach how to use equipment to maximize productivity."

Table 4 shows the categories of responses to this question, the number of times that response was mentioned and the percent of respondents mentioning each need.

Table 4
Technology Needs

Greatest Technology Need	Number of Responses	Percent of Respondent
Staff development	116	40%
Hardware	114	39%
Software	70	24%
Internet	67	23%
Networking	56	19%
Upgraded technology	28	10%
Funding	18	6%
Integration into curriculum/teaching strategies	18	6%
Equity--access to all teachers and learners	16	6%
Multi-media	16	6%
Computer labs	15	5%
Technical support personnel	15	5%
Phones and modems	12	4%
Basic computer knowledge/skills	10	3%
Phone lines capable of high speed data	10	3%
Technology plan/goals	10	3%
E-mail	7	2%
Star Schools/STEP Distance classes	7	2%
Telecommunications/communications	7	2%
Computer teacher	5	2%
Student support/training/skills	5	2%
Student and instructor use	4	1%
Buy-in and support	4	1%
Research/reference	4	1%
Technology curriculum/courses	4	1%
Vocational--CAD and Principles of Technology	4	1%
Word processing	4	1%
Library upgrades	3	1%
Time	3	1%
video training/production	3	1%
Cable/video connection to classrooms	3	1%
Record keeping	2	1%
Affordable communications	2	1%
Early childhood programs	2	1%
Interactive learning--compressed video	2	1%
Keyboarding	2	1%
Release time	2	1%
ILS	2	1%
CAI	2	1%

"We need quality training time for teachers!!! We have the technology but the elementary teachers need training."

Other needs that were mentioned by only one respondent included easy computer use, information retrieval, ITV information, keep pace with technology, lower pupil-teacher ratio, management of computer software, on-line knowledge, people to share information with, space, technology maintenance, technolust, network CD-ROM applications, information access skills, computer and economic education,

drill and practice, technology education lab equipment, increased capability, office technology, parent training, equipment repair, data processing, statewide goals.

Survey Conclusions/Recommendations:

Both the majority of superintendents and principals responding to the survey gave educational technology a high priority for their districts, but fewer indicated an articulated plan. Because research has shown that successful integration of technology depends on a careful plan, it is recommended that school districts place a priority on technology's role in the schools develop a plan for its acquisition and implementation. A well developed plan includes not only a strategy for acquisition of technology, but also strategies for integration into the curriculum, training of staff, technology upgrade and replacement plans, budgets, timelines, and staffing patterns necessary to support technology. Planning must account for the long-term process of adoption of new technologies before integration into schools is successful.

"Our Goals 2000 (plan) focuses on instructional technology and training teachers and students."

Training is an issue that stands out in the survey as the number one need. If teachers are to become effective in educating students for the lives they will lead, they must be confident and competent users of technology. In addition, teachers should be adept at using the various tools available to enable ALL students to meet high standards. Technology has a role in assisting teachers to reach students of various learning styles. Technology's power for teachers is enormous, but can only be realized if teachers have the skills to make the best uses of these powerful tools..

The survey also indicates that there continues to be wide disparities across the state and even within school districts in the numbers and kinds of technologies available for teacher and student use. Some schools have few technologies or predominantly older technologies for instructional use, while other schools have sophisticated labs, CD-ROM players, digitized cameras, telephones in every classroom or other technologies with which to work As with the hardware, access to basic infrastructures that make educational resources available to teachers and students on demand is widely disparate. Telephone lines, cable television or satellite dishes, and building networking make accessing on-line data networks, video resources, distance education resources, and much more possible. Again an equity issue is raised when some students and teachers have access to such materials and others do not. Equal educational opportunities cannot be realized when some students are more prepared for life and work opportunities in the information age than others. The state should examine means by which all districts and schools will have access to the funding needed to the resources needed to effectively implement technology in the classroom.

"Basic infrastructure (is) needed in the state to provide universal access for schools, educators and students. State funding will be needed for technology support."

Schools and districts have become much more knowledgeable in the past two years regarding the potential uses of new technologies and information resources. Because of this knowledge, they show a high frustration level when access to these resources lags behind their needs. These frustrations were shown in the comments regarding funding sources and the desire to move forward more quickly than currently is happening.

"It would be nice to see all the school district funded for instruction and equipment rather than a hit and miss program."

The major barrier to implementing technology in schools continues to be funding for all schools to acquire hardware and software, train teachers and implement and use networks. Funding also limits the use of the Internet and other information services. The state should continue to examine its role in providing

funding sources or incentives for the implementation of technology for all students in the state regardless of location.

Connectivity is increasingly a need in Alaska schools; yet for many rural and remote sites the notion of connecting to the Internet at high speeds without incurring long distance costs is simply a dream. The telecommunications infrastructure in rural Alaska needs to be modernized, but the population base of the areas most in need seemingly do not warrant the investment by telecommunications providers. The state should examine its role in modernizing the telecommunications infrastructure needed across the state for schools to connect to the Information Highway. Awareness and interest in access to the Internet has created a gap between the desire of schools to connect and the available telecommunications infrastructure. The state should work on behalf of schools to work with regulatory agencies, telecommunications providers and others to ensure that schools have access to high speed, affordable telecommunications connectivity.